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**APPARATUS AND METHOD FOR AUTOMATIC  
DETECTION AND AVOIDANCE OF TURBOCHARGER SURGE ON  
LOCOMOTIVE DIESEL ENGINES**

**ABSTRACT OF THE DISCLOSURE**

The invention is an apparatus and method for detecting and responding to a surge event in a locomotive engine system including a turbocharger and a diesel engine. The apparatus includes a sensor for detecting an operating parameter of the turbocharger or the engine and generating a sensor signal indicative of the detected operating parameter. An engine control system is responsive to the sensor signal for controlling a plurality of operational controls of the diesel engine system. The engine control system modifies one or more operational controls of the diesel engine system when the sensor signal indicates a surge event. The invention also provides a method for detecting and controlling a surge event of a locomotive engine system including a turbocharger and a diesel engine operable at a plurality of discrete speeds. The method includes sensing an operating parameter of the engine system, determining a change in the sensed operating parameter indicative of a surge event, and controlling an operational control of the engine system in response to the determined change.